CLAIM AMENDMENTS

1. (currently amended) A process for the low-wear micromachining of workpieces made from metallic materials or metal alloys in which a workpiece (1) is micromachined using at least one machining apparatus (5) that has a diamond tool (6), comprising the steps of:
   a) prior to the machining, subjecting a surface region of the workpiece (1) to a thermochemical surface layer treatment so as to create a thermochemically treated surface zone (2) ~~on~~ within the surface region of the workpiece (1) by introducing a selected element or combination of elements to the surface region of the workpiece (1) and by allowing the selected element or combination of elements to penetrate into the surface region of the workpiece (1) so as to create the thermochemically treated surface zone, and
   b) machining the thermochemically treated surface zone (2) of the workpiece (1) using the machining apparatus (5).

2. (previously presented) The process as claimed in claim 1, wherein the workpiece (1) consists of a metal from transition group IV-VIII.

3. (previously presented) The process as claimed in claim 1, wherein the thermochemical surface treatment introduces at least boron, nitrogen, carbon, oxygen, phosphorus, sulfur into the thermochemically treated surface zone (2).

4. (previously presented) The process as claimed in claim 1, wherein the thermochemical surface zone treatment is selected from the group consisting of nitriding, nitrocarburizing, carbonitriding, boronizing, carburizing, oxidizing, and a combination of these processes.

5. (previously presented) The process as claimed in claim 1, wherein the thermochemical surface zone treatment process is selected from the group consisting of gas nitriding, gas carbonitriding, bath nitriding, plasma nitriding, and laser nitriding.

6. (previously presented) The process as claimed in claim 1, wherein the machining step introduces cuts into the workpiece (1), and the depth of the cuts introduced into the workpiece (1) using the diamond tool (6) is less than the thickness of the thermochemically treated surface zone (2).

7. (withdrawn) A workpiece made from a metal or a metal alloy, in particular steel, with a surface which has been machined by micromachining, characterized in that the workpiece (1) has a surface zone (2) formed by thermochemical surface treatment, such as nitriding, nitrocarburizing, carbonitriding, boronizing or the like.

8. (withdrawn) The workpiece as claimed in claim 7, characterized in that the workpiece (1) is a molding tool for optical mold making, in particular for the production of aspheric optics, optical components with free-form surfaces and prism arrays made from plastic or glass.

9. (withdrawn) The workpiece as claimed in claim 7, characterized in that the workpiece (1) is a precision mechanical component, in particular a bearing shell for air bearings, a valve seat for highly loaded hydraulic actuators, a highly loaded precision guide element, a bearing shell of high-precision ball bearings or a corrosion resistant metal mirror.

10. (withdrawn) The workpiece as claimed in claim 7, characterized in that the workpiece (1) consists of iron, nickel, chromium, vanadium, molybdenum, titanium, tungsten, cobalt, of an alloy based on these metals produced in particular by sintering.

11. (withdrawn) The workpiece as claimed in claim 7, characterized in that the workpiece (1) consists of high-alloy steel.

12. (previously presented) The process as claimed in claim 1, wherein the metallic materials or metal alloys is steel.

13. (previously presented) The process as claimed in claim 1, wherein the machining apparatus (5) is selected from the group consisting of ultraprecision turning, milling and grinding machines.

14. (previously presented) The process as claimed in claim 2, wherein the metal is selected from the group consisting of iron, nickel, chromium, vanadium, molybdenum, titanium, tungsten, cobalt, and alloys thereof.

15. (previously presented) The process as claimed in claim 14, wherein the metal is produced by sintering.